

Application No.: 09/877,645

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Examiner : Shay L. Balsis

Art Unit : 1744

a) Amendments to the Specification

Following the Examiner's "Detailed Action" report, attached to the Office Action regarding the Patent Application under reference, the Applicants are respectfully submitting a corrected "DETAILED DESCRIPTION OF THE INVENTION" in lieu of previous DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS, where necessary corrections were made and some specific recitations had to be added to constitute *a definite antecedent basis* that was previously missing in relation to wording used in the Claims, and also to make clear some statements that could be considered as *confusing and unclear*, and **all without entering any new matter**, as follows:

DETAILED DESCRIPTION OF THE INVENTION

replace
7-15

w/ page 2-10 to
amendment

~~A typical~~ The preferred embodiment of the assemblage of the present invention is illustrated in FIG. 1, plan view, with the interdental hard brush and gum massage stimulator tip retracted in tandem, in the two ends of the toothbrush.

This invention provides a means for combining the brushing cleaning function with the gum massage function and the much needed said interdental brush function, all in one tool. In order to achieve the triple clean effect of ~~this~~ said toothbrush, FIG. 1 shows ~~the~~ said toothbrush (20) and its handle (21) of the tool containing at one end the bristles (23) of the brush (22), clustered in groups, to provide an efficient pattern to fully brush the teeth externally, in a conventional manner.

These said bristles are captured in the end of said plain or electrical toothbrush in an elongated pattern and are firmly molded into the toothbrush body (19), as shown in FIG. 2 side view. Said gum massager and stimulator tip are contained in a recess pocket (25) beneath said toothbrush bristles and they are extended and retracted into this said recess pocket by controlled movement of a button (26) in a guide slot (31). Inside ~~this~~ said toothbrush and its said handle, as shown in FIG. 3, cross section view there is a ~~tubular~~ hollow recess chamber (29) that runs the full length of the said handle. In addition, the neck (24) of the said toothbrush ~~the handle~~ is narrow ~~and slim~~ for a short distance from the said brush end up to the area where the user holds the said handle for ease of entering and brushing the teeth, ~~in the mouth~~. At this point where the user holds the ~~tool~~ said toothbrush, the said handle is widened out to provide a wider and firmer grip for grasping the tool and contains recessed into this grip area the ~~hollow~~ recess chamber (29) that contains a sliding button (26) that is keyed (36) to a slide (34) that slides back and forth on the inside of the said tubular ~~hollow~~ recess chamber in the tool. Attached to the end of this said slide there is ~~a~~ long extension tube (27) that holds ~~the~~ said interdental hard brush (28) for brushing in the gaps and spaces between the teeth. The said sliding button (26) can be moved horizontally in a slot (31) that controls its travel distance, in either direction. Movement in one direction extends ~~the~~ said interdental hard brush out of one end of ~~the said~~ toothbrush, ready for use. Movement of the said button (26) keyed (36) to a slider (34) that has the said internal ~~sliding~~ long extension tube (27), extending out of one end, which provides movement that, in the opposite direction, retracts the said interdental hard brush into said recess ~~a~~ pocket (25) in the toothbrush, below the section where the bristles are molded into the tool. In like manner, FIG. 3 shows a cross section view of said toothbrush with the opposite end of the said toothbrush containing an identical sliding button (26) an sliding extension tube (37), a said key (36), and a said slide (34) in the long ~~hollow~~ recess chamber (29) within ~~the said~~ handle section of ~~the said~~ toothbrush and the movement

of the said button extends and retracts ~~the~~ said extension tube that is keyed to the said slide that holds on its end ~~the said~~ gum massager and stimulator tip (30). Movement of ~~the said~~ button in the said slot (31) in one direction extends ~~the~~ said gum massager and stimulator tip (30), ready for use at the other end of ~~the said~~ toothbrush, and movement of ~~the~~ said button (26) in the opposite direction retracts it into ~~the said~~ handle. FIG. 4 shows both ~~the~~ said gum massager and stimulator tip (30) and ~~the said~~ interdental hard brush (28) retracted into ~~the said~~ toothbrush. ~~The~~ Said toothbrush user has now available all three functional tools in one assembly. All three are held firmly in the same tool and readily available for addressing each tooth cleaning function as needed, in any cleaning order, at the user discretion. The ends of the said internal sliding long extension tube (27) and shorter sliding extension tube (37) are made contains a slot that permits the said gum massager and said interdental brush to be inserted for use, as needed, or replacement and can accept at either end of ~~the~~ said toothbrush the said gum massage stimulator tip (30) or ~~the~~ said interdental hard brush (28). This invention could accept other end attachments such as a toothpick, dental floss, or other dentist recommended cleaning or treatment tools, should they be required. Both the said gum massager and stimulator tip (30) and ~~the~~ said interdental hard brush (28) can be replaced as needed. The respective said sliding extension tubes ~~have~~ provide replacement capability and the said gum massager and interdental brush can be interchanged within the said internal chamber.

It has been found that if the user applies diligently to all three cleaning, brushing and massaging functions on a regular basis, the life of the three components is about equal, i.e., all three will wear out at about the same time. Therefore, the brush user will replace the inexpensive assembly rather than attempt to replace individual parts. For that reason, no complex latching functions are needed in this triple-clean toothbrush.

For assembly and manufacturing purposes, and should there be a need for replacement of the said rubber tip that constitutes the said gum massager and stimulator tip, or ~~the~~ said interdental hard brush, the said extension tubes (27) or (37) contain a slit ~~(17)~~ (35) down one side, or two sides if needed, to permit the tube to be expanded in diameter and allow insertion of the said gum massager and stimulator tip (30) or said interdental hard brush (28) interface stem (38) to be forceably pressed into the said extension tube. In FIG. 3A, an enlarged view, shows how the said slit in the tube side walls capture and hold ~~the~~ said stem ~~(18)~~ (38) of the said gum massager and stimulator tip, and said interdental hard brush, by deflection of the said slit tube side walls. The said stem is slightly reduced in diameter where the said sliding tube side walls grasp the said stem and capture it. The said stem contains minor indentations to impede easy removal from the said slit extension tubes and ~~the~~ said inner wall of the said extension tubes is course machined to increase the resistance of component accidental removal.

~~Description Figures 5 to 10 SECOND EMBODIMENT OF THIS INVENTION~~

~~This~~ An optional embodiment shown in FIG.5 of this triple clean toothbrush in plan view and also provides a means for combining the brushing cleaning function with the gum massage and stimulation functions, and the much needed interdental brush function, all in one tool, but the assemblage places the interdental hard brush and the said gum massager and stimulator tip, ~~are~~ both at the opposite end of the toothbrush bristles, ~~as shown in Figure 5.~~ FIG.6 shows a section cut illustrating the said buttons keyed to said slide and FIG. 7 shows said dental components extended out of the said toothbrush. ~~The~~ Said toothbrush handle (21) of this tool embodiment contains at one end the said toothbrush (22) with ~~the~~ said bristles (23) clustered in groups, in a conventional manner. In this embodiment, FIG. 7 shows the said handle (21) comprising of two hollow cylinders (32) shown in a sectional view in FIG. 6 that run the full length of ~~the~~ said handle. In addition, the said neck of the handle (24) is narrow and slim for a short distance from the brush end,

for ease of brushing and entering into the mouth. At the point where the user holds the said handle, it is widened out to provide ~~this~~ a wider grip for grasping the tool and the grip is comprised of the said two hollow cylinders (32) running parallel to each other, that are retained by ~~a~~ said sliding button (26) that is attached to ~~a~~ said slider (34) with ~~a~~ said key (36) that runs in ~~a~~ said slot (31) and the said key engages the said traveling slider (34) that slides back and forth in each of the said long hollow cylinders that comprise the said handle, as illustrated in FIG. ~~6-7, 8, 9~~ side view. The travel length is defined by said slot (31) in each of the said hollow cylinders and the said key (36) engages both the said button (26) and the said traveling slider (34). Attached to the end of the said slider is ~~an~~ said sliding extension tube (37) that holds the interdental hard brush (28) for brushing in the gaps and spaces between the teeth. The said sliding button can be moved a short distance, horizontally in its said slot, in the two said hollow cylinders, in either direction. Movement in one direction extends, ready for use, the said interdental hard brush out of the end of one of the said ~~hollow~~ cylinders, that is part of ~~the~~ said handle of ~~the~~ said toothbrush. Movement of the said button attached to the said internal sliding extension tube, in the opposite direction, retracts the said interdental hard brush into the said tube, that is part of the said toothbrush handle. FIG. 9 shows a side view with the said interdental brush extended.

In like manner, shown in FIG. 10, within the said second parallel hollow cylinder, but on the opposite side of the said toothbrush handle, the said toothbrush embodiment contains an identical button (26), and said sliding tube (37) in ~~the long cavity (29)~~ one of the two said hollow cylinders that form the said handle of the said toothbrush, and the movement of the said button (26) extends and retracts the said extension tube that has attached to its end the said gum massager and stimulator tip (30). FIG.10 shows the said gum massager and stimulator tip extended and FIG.10A shows it retracted. Movement in one direction extends out the said gum massager and stimulator tip, ready for use, and with movement of the said button in the opposite direction retracts it into the said

hollow cylinder that is part of said handle of ~~the~~ said toothbrush. The said button that moves the said slider can be located as shown in sectional view of FIG. 6 on the center of the said handle, or at any position around the perimeter of the said cylinders. ~~as shown in FIG. 9 and 10.~~

The toothbrush user has available all three functional tools in one assembly, all held firmly in the same tool and easily available for addressing each tooth cleaning function as needed, independently, in any cleaning order, at the user discretion.

The ends of the said internal sliding extension tubes are made to accept either the said gum massager and stimulator tip (28), the said interdental hard brush (30) or other dentist recommended cleaning or treatment tools. Both the said gum massager and stimulator tip and the said interdental hard brush can be replaced as needed. The said sliding tube extensions have replacement capabilities, as shown in FIG. 3A. Both said cylinders that form the said handle of ~~the~~ said toothbrush, and contain ~~inside~~ within the two said additional tools, have close-out caps (47) hinged to the cylinder ends to seal them and avoid damage and any possible contamination. The said close-out caps can be rotated open as shown in FIG. 7 by movement of the said button (26) to the extend position which pushes open the said close-out cap. After the cleaning of the respective tools, following their use, the said caps are rotated back into the end of the said cylinders, to seal them.

~~Description Figures 11 to 14 THIRD EMBODIMENT OF THIS INVENTION~~

The assemblage of this optional embodiment shown in FIG. 11 ~~12 13 14~~, places ~~the said~~ interdental hard brush (28) and ~~the said~~ gum massager and stimulator tip (30) at the opposite end from the said conventional bristles of ~~the said~~ toothbrush (20) in two recess chambers (49) that run parallel to each other in the said handle (21). Within each said recess chamber there is installed a sliding cover ~~(20)~~ (40) for closing out the said recess chamber and a tubular support arm (41) that is Tee-shaped with the cross member (42) providing an axis (33) for the said Tee to rotate around a pivot

upward out of the said recess chamber shown in FIG. 12 . The said cross member contains two projection pins (43) that work like an axle that locate it in the said recess chamber (49) and each said projection pin engages a hole (39) located on the sidewall of the said recess chamber. With these said projection pins positioned in their said mating hole, the said Tee-shaped tubular support arm can be rotated around the said axis provided by ~~these~~ said projecting pins as shown in FIG. 13.

The other end of the said tubular support arm (41) provides ~~an~~ said sliding extension tube (37) with ~~the said~~ slit sidewalls ~~as previously shown in Figure 3A~~ for insertion of ~~the said~~ interdental hard brush (28) or ~~the said~~ gum massager and stimulator tip (30). As said tubular support arm is narrow and sits in ~~its~~ said toothbrush handle recess chamber with ample room about it, then the user can easily grasp it with his fingers and rotate it out of the said handle recess chamber. After rotation to the extended work position, ~~the said~~ cover (40) can be slid over ~~the said~~ pivot point projection pins (43) and locks it in the extended location, as shown in ~~Figure~~ 14. The recess chamber that contains these rotating tools can be located on any side of the said handle. ~~that is available.~~

In this optional embodiment, each said recess chamber (49) in said toothbrush handle is provided with said sliding cover (40) shown in FIG. 11, that protects the internal dental tools from damage by handling and contamination. FIG. 12 in this embodiment shows the said covers slid back in ~~the~~ said open position and the tools are available in their said protective recess chambers (49) . With the said covers in the open position the tools can be rotated out ready for use as shown in FIG. 12 , each said cover contains said serrations ~~grooves~~ (48) to make it easy to slide ~~the~~ said cover open and closed. FIG. 13 illustrates how either tool can be rotated to the user position easily and quickly. FIG. 14 illustrates a cross section through the said pivot point and shows how ~~the~~ said cover (40) slides in said grooves molded in the side walls of the said recess chamber (49) and captures the said tubular arm cross member (42) in a locked position.

~~Description Figure 15 - FOURTH EMBODIMENT OF THIS INVENTION~~

In this optional embodiment, FIG. 15, of the toothbrush (50), two knurled or serrated threaded sleeves (45) are provided to extend or retract the said interdental hard brush (28) and ~~the~~ said gum massager and stimulator tip (30) out of the handle (51) ~~as illustrated in Figure 15.~~ Each of these said threaded sleeves, when rotated individually, threads out ~~an~~ threaded internal shaft (46) that extends the ~~extubular~~ extension tube (44) with the said interdental hard brush and said gum massager and stimulator tip attached to their ends.

Opposite rotation of each of the said sleeves retracts the said threaded internal shaft and this causes the retraction of said interdental hard brush and said gum massager and stimulator tip into the chamber that forms the handle of the said toothbrush. Said close-out caps (47) hinged to the ~~tube~~ ends of the recess chambers will close each ~~tube~~ to prevent damage and contamination. These said close-out caps, ~~or covers, operate and~~ are attached to the said toothbrush handle in a similar manner as shown and described in FIG. 7 of an optional ~~previous~~ embodiment. FIG. 15 provides an exposed view that shows structural ~~cross~~ members ~~(48)~~ (55) that capture and ~~support~~ entrap the said threaded sleeves.

The said body of said handle is comprised of three chambers, a closed forward ~~closed~~ chamber (52), a closed aft chamber (53) and an ~~center~~ open center chamber (54) that captures the two threaded sleeves and provides access to them in order to rotate ~~by rotating~~ them to screw in and out the said internal threaded shaft with said extension tubes ~~(57)~~ (44) that hold ~~the~~ said interdental hard brush and ~~the~~ said gum massager and stimulator tip. In this manner, the said interdental hard brush and ~~the~~ said gum massager and stimulator tip are attached to said ~~tubular~~ sliding extensions tubes (37) that extend from the end of the said threaded shaft (46) and said both interdental hard brush and said gum massager and stimulator are attached to the said tubular extension in the manner described in previous embodiments.

This invention with its optional embodiments is simple in construction, easy to operate, unique in arrangement, function and assembly, and lends itself to economical manufacture. These features of the various embodiments, together with other objects and advantages which become subsequently apparent, reside in the details of the construction and operation, as more fully herein described and claimed, reference being added in the accompanying drawings, forming a part herein.

Although the description above contains many specifications, these should not be construed as limiting the scope of the invention, but as merely providing illustrations of some of the present embodiments of the invention, as well as equivalent embodiments.
